L4 ANSWER 7 OF 15 BIOTECHDS COPYRIGHT 2002 THOMSON DERWENT AND ISI
ACCESSION NUMBER: 1998-04018 BIOTECHDS
TITLE: Metabolic engineering of bacteria for **ethanol production**;
by transformation with the Zymomonas mobilis pyruvate-**decarboxylase** gene ; a review
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SOURCE: Biotechnol.Bioeng.; (1998) 58, 2-3, 204-14
CODEN: BIBIAU
ISSN: 0006-3592
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The metabolic engineering of bacteria to convert lignocellulose into ethanol is reviewed. Topics include: lignocellulose is a challenging substrate for bioconversion; dilute hydrolysis of hemicellulose; enzymatic hydrolysis of cellulose; nutrients for lignocellulose-based fermentation; a hybrid approach for lignocellulose conversion to ethanol;
genetic engineering of bacteria to ferment hemicellulose sugars; improvements in ethanologenic Escherichia coli; fermentation of hemicellulose-derived sugars; genetic engineering of bacteria for cellulose fermentation; process optimization for cellulose fermentation; **ethanol production** acid-treated bagasse; **ethanol production** from office mixed waste-paper; other improvements in the biomass conversion; fermentation of di-, tri-,and tetrasaccharides; and nutrients for the fermentation of lignocellulosic sugars. For **ethanol production**, the Zymomonas mobilis pyruvate-**decarboxylase** (EC-4.1.1.1) gene has been expressed in E. coli, Erwinia chrysanthemi, Klebsiella planticola, Klebsiella oxytoca, Enterobacter cloacae and **Bacillus** subtilis.

L4 ANSWER 13 OF 15 SCISEARCH COPYRIGHT 2002 ISI (R)
ACCESSION NUMBER: 94:535177 SCISEARCH
THE GENUINE ARTICLE: PD286
TITLE: CONSTRUCTION OF RECOMBINANT PLASMIDS FOR EFFICIENT EXPRESSION OF THE PYRUVATE **DECARBOXYLASE** GENE (PDK) FROM ZYMOMONAS-MOBILIS IN **BACILLUS** -SUBTILIS
AUTHOR: DANILEVICH V N (Reprint); DUZHII D E; BRAGA E A
CORPORATE SOURCE: MOSCOW GENET & SELECT IND MICROORGANISMS INST, MOSCOW 113545, RUSSIA (Reprint)
COUNTRY OF AUTHOR: RUSSIA
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ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The pdk gene from Zymomonas mobilis localized in a 4.7-kbp SphI fragment of plasmid pB201 was subcloned into the SmaI site of the M13mp19 vector using the DraI restriction endonuclease. The M13mp19 derivatives obtained, carrying a 1.8-kbp DraI fragment in opposite orientations, were used to sequence the pdk gene beginning and end (about 250 bp each) and for site-directed mutagenesis. Using polymerase chain reaction with synthetic oligonucleotide primers, a BamHI site was created in front of the pdk gene initiating codon. The BamHI fragment harboring the pdk gene was cloned into shuttle vector pCB20 under the control of ''expression unit'' EU19035 containing bacillar vegetative promoter and ribosome-binding site (RBS). The pdk gene expression was studied in the recombinant plasmid pCB20pdkI, a derivative of pCB20, which was shown to yield a high level of pyruvate **decarboxylase** [EC 4.1.1.1] synthesis in **Bacillus** subtilis. However, this plasmid strongly inhibited the Escherichia coli cell growth and was eliminated from the cells at a high fr